



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/690,032	10/21/2003	Tao Luo	TI-36316	4000

23494 7590 01/12/2007  
TEXAS INSTRUMENTS INCORPORATED  
P O BOX 655474, M/S 3999  
DALLAS, TX 75265

EXAMINER
----------

TU, JULIA P

ART UNIT	PAPER NUMBER
----------	--------------

2611

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/12/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/690,032

Applicant(s)

LUO ET AL.

Examiner

Julia P. Tu

Art Unit

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 October 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 21-23 is/are allowed.
- 6) ☒ Claim(s) 1-20, 24, 25 and 27-29 is/are rejected.
- 7) ☒ Claim(s) 26 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 provides for the use of a method for detecting a symbol, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claim 1 is rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

Claims 2-20 are rejected as incorporating the deficiencies of claim 1 upon which it depends.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

Art Unit: 2611

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 24 and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Subramanian (5,361,276).

(1) with regard to claim 24:

As shown in figures 1 and 3, Subramanian discloses a wireless device comprising:

a radio frequency (RF) signal input (the reference discloses a spread spectrum receiver, thus it is inherent that there is a radio frequency signal input);

a symbol detector coupled to the RF signal input, the symbol detector containing circuitry to calculate a frequency error estimate based upon symbols from the RF signal input and to correct frequency errors in symbols from the RF signal input using the calculated frequency error estimate via mathematical manipulations (see frequency correction loop in figure 1: blocks 112, 114, 106); and

a combiner coupled to the symbol detector, the combiner containing circuitry to merge output from the symbol detector based on a weight assigned to the output (block 110 in figures 1 and 3).

(2) with regard to claim 25:

Subramanian further discloses a demodulator and decoder coupled to the combiner, the demodulator and decoder containing circuitry to remove spreading codes

Art Unit: 2611

applied to the symbols from the RF signal input prior to their transmission and to produce digital data (see blocks 108 and 122 in figure 1).

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 27-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Subramanian (5,361,276) in view of Chen et al. (US 6,650,912).

(1) with regard to claim 27:

Subramanian disclose all of the subject matters in claim 24 above except for the wireless device operates in a wireless communications network that uses paging indicators to inform wireless devices of incoming calls.

However, Chen et al. disclose the wireless device operates in a wireless communications network that uses paging indicators to inform wireless devices of incoming calls (see abstract).

The wireless device operates in a wireless communications network that uses paging indicator to inform wireless devices of incoming calls is well known in the art. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include the wireless device operates in a wireless

Art Unit: 2611

communications network that uses paging indicator to inform wireless devices of incoming calls as taught by Chen et al. to the system as taught by Subramanian to significantly improve standby time (column 3, line 9) so as to lower power consumption.

(2) with regard to claim 28:

Chen et al. further teach the wireless communications network is a 3rd Generation Partnership Project (3GPP) compliant network (column 1, lines 30-35).

It is desirable to include the wireless communications network is a 3rd Generation Partnership Project (3GPP) compliant network to increase system capacity (column 1, line 25). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include the wireless communications network is a 3rd Generation Partnership Project (3GPP) compliant network as taught by Chen et al. to the system as taught by Subramanian in order to increase system capacity.

(3) with regard to claim 29:

Chen et al. further teach the wireless communications network is a CDMA2000 compliant network (column 1, lines 35-43).

It is desirable to include the wireless communications network is a CDMA2000 compliant network to increase system capacity (column 1, line 25). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include the wireless communications network is a CDMA2000 compliant network as

Art Unit: 2611

taught by Chen et al. to the system as taught by Subramanian in order to increase system capacity.

***Allowable Subject Matter***

8. Claims 21-23 are allowed.
9. Claim 26 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
10. The following is a statement of reasons for the indication of allowable subject matter: The present invention comprises a symbol detector comprising: a first and a second symbol buffer coupled to a symbol input; a frequency error estimator (FES) unit coupled to the first and second buffers, the FES unit containing circuitry to compute a frequency error estimate from the symbols in the first and second buffers; a phase vector generator coupled to the FES unit, the phase vector generator containing circuitry to compute a phase rotation vector based on the frequency error estimate; a first phase error corrector coupled to the first symbol buffer and the phase vector generator, the first phase error corrector containing circuitry to rotate the symbols in the first symbol buffer; and a second phase error corrector coupled to the second symbol buffer and the phase vector generator, the second phase error corrector containing circuitry to rotate the symbols in the second symbol buffer, compute a channel gain for each symbol in the second symbol buffer, and apply the channel gain to the rotated symbols from the second symbol buffer. The closest prior art, Subramanian, Borowski

Art Unit: 2611

et al., and Chen et al. teach a similar system with frequency error correction but fail to teach a phase vector generator coupled to the FES unit, the phase vector generator containing circuitry to compute a phase rotation vector based on the frequency error estimate; a first phase error corrector coupled to the first symbol buffer and the phase vector generator, the first phase error corrector containing circuitry to rotate the symbols in the first symbol buffer; and a second phase error corrector coupled to the second symbol buffer and the phase vector generator, the second phase error corrector containing circuitry to rotate the symbols in the second symbol buffer, compute a channel gain for each symbol in the second symbol buffer, and apply the channel gain to the rotated symbols from the second symbol buffer. The distinct features have been added to the independent claim 21 and dependent claim 24, therefore, rendering them allowable.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julia P. Tu whose telephone number is 571-270-1087. The examiner can normally be reached on 7:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh M. Fan can be reached on 571-272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.



Art Unit: 2611

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

J.T.  
01/05/2007



CHIEH M. FAN  
SUPERVISORY PATENT EXAMINER